

CLAIMS

- 1 1. A method for transforming a program having a first
2 multi-tasking property to a program having a second
3 multi-tasking property, the method comprising:
4 transforming a first program having a first multi-
5 tasking property into a data structure;
6 transforming the data structure to include an
7 explicit multi-tasking transfer of control
8 command;
9 optimizing the data structure to reduce an amount
10 of program state that is saved at a transfer
11 of control; and
12 generating a second program having a second multi-
13 tasking property using the optimized data
14 structure.
- 1 2. The method of claim 1, wherein the data structure
2 further comprises a syntax tree.
- 1 3. The method of claim 2, wherein the step of transforming
2 the data structure to include an explicit multi-tasking
3 transfer of control command further comprises:

4 converting the syntax tree to a continuation-
5 passing style (CPS).

1 4. The method of claim 1, wherein the first multi-tasking
2 property comprises a property relating to a preemptive
3 multitasking model and the second multi-tasking
4 property comprises a property relating to a run-to-
5 completion model.

1 5. The method of claim 1, wherein the first program having
2 a first multi-tasking property operates using a first
3 program language and the second program having a second
4 multi-tasking property also operates using the first
5 program language.

1 6. A system for transforming a program having a first
2 multi-tasking property to a program having a second
3 multi-tasking property, the system comprising:
4 a data structure transformer for transforming a
5 first program having a first multi-tasking
6 property into a data structure;

7 a multi-tasking transformer for transforming the
8 data structure to include an explicit multi-
9 tasking transfer of control command;
10 a program state optimizer for optimizing the data
11 structure to reduce an amount of program
12 state that is saved at a transfer of control;
13 and
14 a program generator for generating a second
15 program having a second multi-tasking
16 property using the optimized data structure.

1 7. The system of claim 6, wherein the data structure
2 further comprises a syntax tree.

1 8. The system of claim 7, wherein the multi-tasking
2 transformer further comprises:

3 a converter for converting the syntax tree to a
4 continuation-passing style (CPS).

1 9. The system of claim 6, wherein the first multi-tasking
2 property comprises a property relating to a preemptive
3 multitasking model and the second multi-tasking

4 property comprises a property relating to a run-to-
5 completion model.

1 10. The system of claim 6, wherein the first program having
2 a first multi-tasking property operates using a first
3 program language and the second program having a second
4 multi-tasking property also operates using the first
5 program language.

1 11. An article of manufacture for transforming a program
2 having a first multi-tasking property to a program
3 having a second multi-tasking property, the article of
4 manufacture comprising:

5 at least one processor readable carrier; and
6 instructions carried on the at least one carrier;
7 wherein the instructions are configured to be
8 readable from the at least one carrier by at least
9 one processor and thereby cause the at least one
10 processor to operate so as to:

11 transform a first program having a first
12 multi-tasking property into a data
13 structure;

14 transform the data structure to include an
15 explicit multi-tasking transfer of
16 control command;
17 optimize the data structure to reduce an
18 amount of program state that is saved at
19 a transfer of control; and
20 generate a second program having a second
21 multi-tasking property using the
22 optimized data structure.

1 12. A processor readable medium for providing instructions
2 to at least one processor for directing the at least
3 one processor to:
4 transform a first program having a first multi-
5 tasking property into a data structure;
6 transform the data structure to include an
7 explicit multi-tasking transfer of control
8 command;
9 optimize the data structure to reduce an amount of
10 program state that is saved at a transfer of
11 control; and

12 generate a second program having a second multi-
13 tasking property using the optimized data
14 structure.

1 13. A signal embodied in a carrier wave and representing
2 sequences of instructions which, when executed by at
3 least one processor, cause the at least one processor
4 to transform a program having a first multi-tasking
5 property to a program having a second multi-tasking
6 property by performing the steps of:
7 transforming a first program having a first multi-
8 tasking property into a data structure;
9 transforming the data structure to include an
10 explicit multi-tasking transfer of control
11 command;
12 optimizing the data structure to reduce an amount
13 of program state that is saved at a transfer
14 of control; and
15 generating a second program having a second multi-
16 tasking property using the optimized data
17 structure.